National Aeronautics and Space Administration

LAGNIAPPE

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Imagery of Africa completed through EarthSAT/NASA project

Earth Satellite Corp. of Rockville, Md., has completed a data set image of the continent of Africa for NASA's Scientific Data Buy (SDB) Project at the John C. Stennis Space Center.

The initial development of this global image database draws on the entire legacy of U.S. involvement in a land satellite program called Landsat. The data set, gathered from the Landsat satellites, is part of a $16 million scientific data buy contract NASA awarded EarthSAT to provide high-resolution images of the entire Earth.

"Africa and portions of the Middle East are the first images completed; however, by fall 2000, the company plans to have completed an image mosaic of the entire world using Landsat imagery," said Fritz Policelli, NASA's SDB project manager with the Commercial Remote Sensing program at Stennis Space Center. "This will be the first time orthorectified images are produced of the entire Earth at 30 meters resolution."

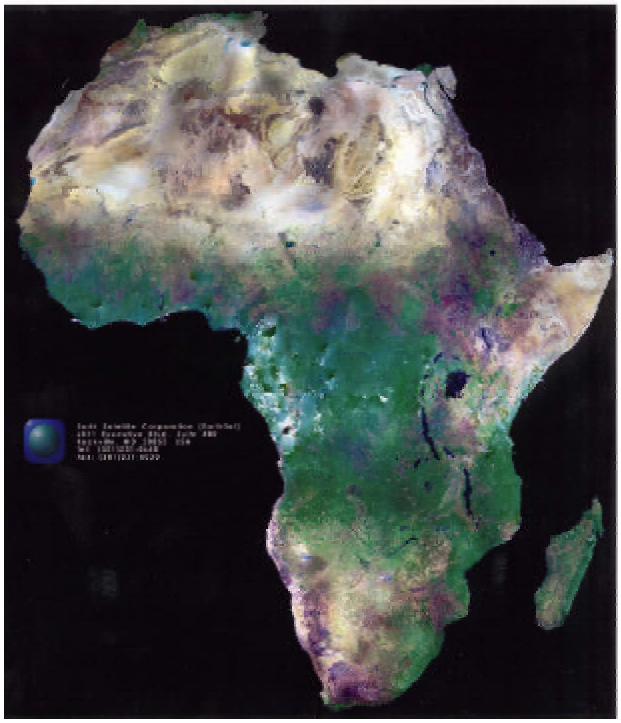
Orthorectification is the process of correcting the raw imagery for errors introduced by variations in the Earth's elevation.

Policelli said the images would allow scientists to study the Earth's land use changes, as well as track previous land management results. The data will be used by the scientific community to study land cover, urban sprawl, desertification, coastal changes, deforestation and many other aspects of our changing planet.

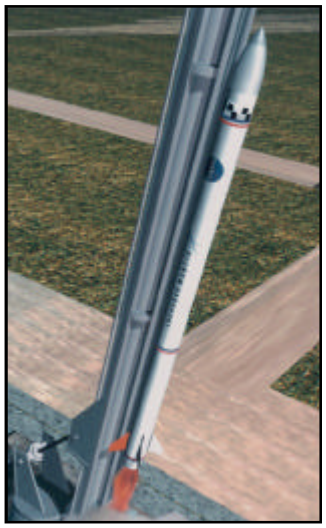
Earth Satellite Corp. is providing two historical sets of data**:** orthorectified Multispectral Scanner Imagery from the 1970s, and orthorectified Thematic Mapper (TM) Imagery from 1987-1993 with 1990 as a target date. The 1970s data will be used as a baseline to track changes that have taken place over the past 20 years.

A third set of data—a compressed mosaic of the 1990's Landsat TM data—will also be available.

See DATA BUY, Page 8



This image of Africa is one of the first completed for NASA's Scientific Data Buy (SDB) Program at the John C. Stennis Space Center by the Earth Satellite Corp. of Rockville, Md. By fall 2000, the company plans to have completed an image mosaic of the entire world using Landsat imagery.



An artist's concept of the Hybrid Sounding Rocket.

Stennis provides test operations expertise in development of hybrid sounding rocket motor

In support of advancing hybrid rocket motor technology, NASA's Stennis Space Center is providing propulsion test operations expertise to Lockheed Martin Michoud Space Systems, New Orleans, La.

Included among the numerous full-scale and component-level test programs at Stennis is the Hybrid Sounding Rocket (HYSR). The sounding rocket is being developed by Lockheed Martin for suborbital space and atmospheric science missions and can also be used as a flyable testbed for small-scale experiments. Development and testing of the Hybrid Sounding Rocket has begun at Stennis with its first demonstration flight scheduled for late March 2000.

Testing of the sounding rocket is being conducted at Stennis' E-3 test facility. Initial tests are targeted to analyze the liquid oxygen tank pressurization system utilizing a combination of flight and ground test hardware. As hardware and design confidence develops, flight weight assets will be introduced for verification and validation.

As the name implies, hybrid rocket motor design incorporates both solid and liquid type propellants. Historically, rocket engine design has used either all liquid or all solid propellants. Both have specific advantages upon which the hybrid design tries to capitalize. A pure solid rocket motor has no efficient means to control

See HYBRID, Page 7

LAGNIAPPE **Commentary**

Gator's Y2K Solution...

I was driving down to a picnic at the Cypress House pavilion when I spied a strange sight along the lower Gainesville Road. It was our old friend, Gator, ambling along with a bright red Radio Flyer wagon in tow. The wagon was stacked top-heavy with what looked to be a wide assortment of junk.

Although the October weather made for a very pleasant day, Gator was all sweaty, struggling along the side of the road with his heavy wagonload of "whatever."

I stopped the Bamamobile and got out to see what Gator was pulling down the road in his red wagon. There were several cans of sardines, Vienna Sausage, pork and beans, Spam, potted meat, a block of rat cheese and a few boxes of saltine crackers. Also in the littered load was a Barlow pocketknife, fishing tackle, a chopping ax, a box of pocket matches, an iron skillet, a syrup bucket and a sack of cornmeal. On top of the hodgepodge of gear was a ragged quilt and stuffy pillow with feathers sticking out of its corners. Strapped on the side of the wagon were a double-barrel shotgun and a kerosene lantern. A rabbit's foot was dangling from the back of the wagon.

"Where ya going, Gator?" I asked. "Looks like you're off on a hibernating trip."

"Don't be funny mister smart nerd," Gator replied, "I'm getting ready for Y2K, and you best be doing the same thing. Time is running out, and you're gonna be eat up with millennium bugs before you can say Windows 98!"

"But don't you think you're overreacting?" I quizzed the worried-looking Gator. "After all, I believe about everyone has complied with the Y2K guidelines. I understand Stennis and the other NASA centers have completed their conversions and checked out their systems."

"Ain't taking no chances," Gator quipped. "Besides, I been hearing that it may not be safe flying airplanes outside the good ole USA. And some are saying the 'lectricity is going out, the banks will go belly-up, and even the supermarkets will have to shut down. A pretty mess Mr. C.D. Rom has gotten us all into!"

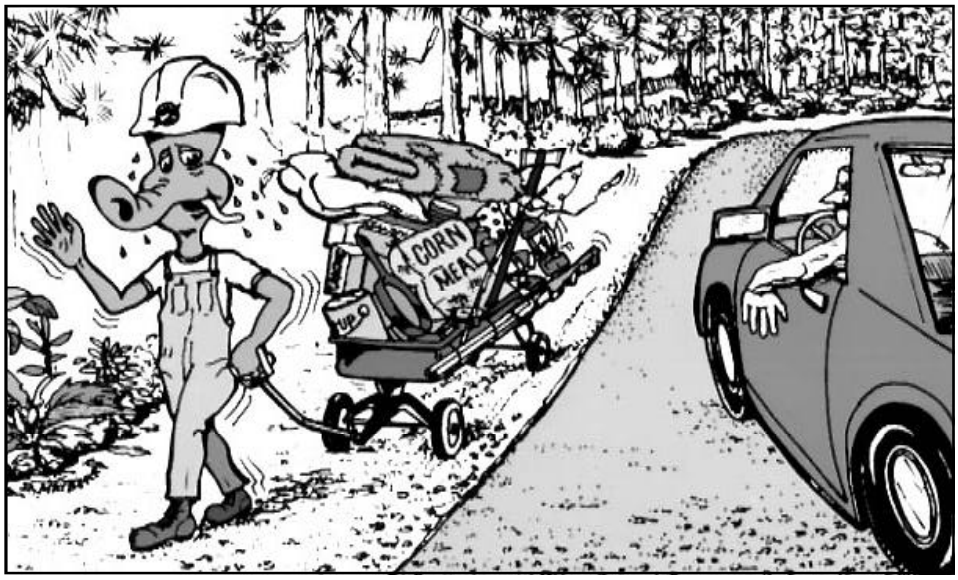
"Gator, you still haven't answered my original question," I probed. "Where on Earth are you going with that menagerie of, uh, goods you're hauling in that old wagon?"

"Well if you must know, Mr. Macintosh—but don't you dare tell a soul—I'm going to my secret hangout in the Honey Island Swamp where they ain't never seen hide nor hair of a Com-Pu-Ter!" Gator retorted angrily. And you can just join them Silicon Valley billionaires in their private jets they're flying to New Zealand or wherever to wave in the new millennium."

"Gator, you're just jealous because you don't own a computer and can't send e-mails to your grand-gators or pull up Lord knows what on the Internet," I chided.

"Take your laptop, and get out of my way!" Gator barked. I hope you're still around when your odometer rolls over to 2000. If you are, I'll bring you a mess of fish when I come out of the swamp. Ark! Ark! Ark!"

M.R.H.



NASA NEWSCLIPS

NASA forms independent team to review shuttle maintenance practices – Following the recent discovery of maintenance-related damage to electrical wiring in the Space Shuttle, NASA is forming a team of leading aerospace experts to review the overall safety of shuttle maintenance and refurbishment practices.

The team will be chaired by Dr. Henry McDonald, director of NASA's Ames Research Center, Moffett Field, Calif.

The team will assess NASA's standard practices for maintaining and refurbishing the shuttle orbiters, main engines and solid rocket boosters. It also will recommend improvements. Preliminary findings will be presented to NASA this month.

NASA researcher finds evidence that universe may be younger than previously thought–Dr. Eyal Maoz of NASA's Ames Research Center, Moffett Field, Calif., and astrophysicists from a variety of U.S. and Canadian institutions, using the Hubble Space Telescope, have found evidence suggesting that the universe may be younger than scientists had previously thought, and that it is expanding faster than expected. Their findings were reported in the Sept. 23 issue of Nature magazine.

"The bottom line is that it seems that galaxy distances may have been consistently overestimated by about 12 percent," Maoz said. "This would imply that the universe is expanding faster than expected, and the age of the universe is lower by a similar factor."

NASA technology may help victims of diabetes–Some American diabetics may soon be using NASA's virtual-reality technology to peer inside the human body and manage the effects of the disease.

Preliminary observations show that artificial-vision technology, used to help pilots train to fly in poor visibility, helps diabetics at risk for nerve damage visualize and control blood flow to the arms and legs.

Strelitz Diabetes Research Institutes of the Eastern Virginia Medical School, Norfolk, Va., signed agreements with Langley's Technology Commercialization Program Office to test the NASA device.

Galileo spacecraft has hot date with moon

NASA's Galileo spacecraft rendezvoused Oct. 11, with Jupiter's moon Io (pronounced EYE-oh), the most volcanic body in our solar system.

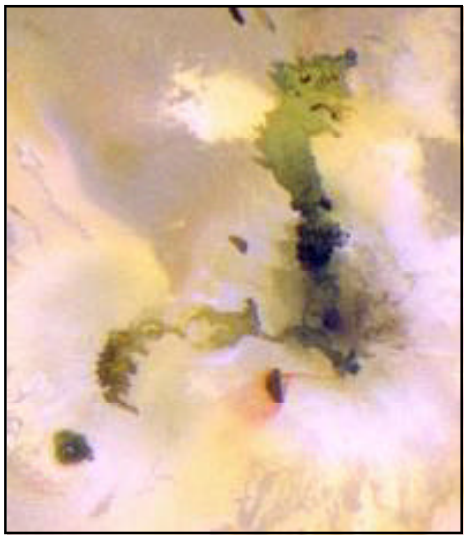
Galileo swooped down to within 380 miles (612 kilometers) above Io's fiery surface at 1:06 a.m. EDT, snapping the closest-ever pictures of this intriguing celestial body.

"Io is a natural laboratory for volcanoes," said Dr. Duane Bindschadler, Galileo manager of science operations and planning, Jet Propulsion Laboratory, Pasadena, Calif., "By studying Io close up, we'll learn more about how and when volcanoes erupt and why they act the way they do. This may even help us predict the behavior of volcanoes on Earth."

During the flyby, Galileo's science instruments will study the chemistry, heat distribution, gravity and magnetic properties of Io. For scientists, this thrilling encounter promises to yield a bonanza of pictures and information, but for Galileo engineers the flyby presents a serious challenge with uncertain results. Io's orbit lies in a region of intense radiation from Jupiter's radiation belts, which could affect the performance of spacecraft systems or even knock out various spacecraft instruments. A mere fraction of the dose that Galileo will receive would be fatal to a human.

Galileo was originally assigned to spend two years studying Jupiter, its moons and its magnetic environment. When that original mission ended in December 1997, it was followed by a two-year extended mission, scheduled to end in January 2000. While spending the past four years near Jupiter, Galileo has been exposed to radiation on an ongoing basis, which has caused some of its instruments to act up.

Galileo, the first spacecraft to orbit Jupiter, has revolutionized our knowledge of Jupiter and its moons and has provided thousands of colorful images. Data from Galileo support the premise of a liquid ocean beneath the icy crust of Jupiter's moon Europa, an intriguing prospect since water is a vital ingredient for life. Thanks to information sent by Galileo, scientists know much more about the weather on Jupiter and the composition of its moons. En route to Jupiter, the spacecraft took the first-ever close-up pictures of asteroids, when it photographed Gaspra and Ida, and it returned historic images of the destruction of comet Shoemaker-Levy 9 as its pieces slammed into Jupiter.



This pair of volcanic features on Jupiter's moon Io represents the longest active lava flow known to exist in our solar system. This image, one of the highest resolution pictures ever taken of Io, was obtained by NASA's Galileo spacecraft on July 3, 1999.

If all goes well with the upcoming Io flyby, the spacecraft will make an even more daring approach of Io on Nov. 26 at an altitude of only 186 miles (300 kilometers).

New Io images taken by the spacecraft are available at the following website: http://www.jpl.nasa.gov/pictures/io.

Chandra discovers ring around Crab Nebula

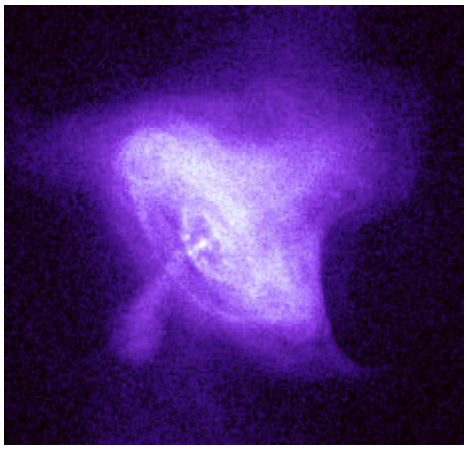
After barely two months in space, NASA's Chandra X-ray Observatory has taken a stunning image of the Crab Nebula, the spectacular remains of a stellar explosion, and has revealed something never seen before—a brilliant ring around the nebula's heart.

What is going on, according to Dr. Martin Weisskopf, Chandra Project scientist from NASA's Marshall Space Flight Center, Huntsville, Ala., is awesome.

"The Crab pulsar is accelerating particles up to the speed of light and flinging them out into interstellar space at an incredible rate."

The Crab Nebula, easily the most intensively studied object beyond our solar system, is the remnant of a star that was observed to explode in 1054 A.D. Chinese astronomers in that year reported a "guest star" that appeared suddenly and remained visible for weeks, even during daytime. From gamma-ray telescopes to radio telescopes, the Crab has been observed using virtually every astronomical instrument that could see that part of the sky.

NASA's Marshall Space Flight Center manages the Chandra program. TRW Inc., Redondo Beach, Calif., is the prime contractor for the spacecraft. The Smithsonian's Chandra X-ray Center controls science and flight operations from Cambridge, Mass.



This image, taken by the Chandra X-ray Observatory, shows tilted rings or waves of high-energy particles around Crab Nebula that appear to have been flung outward over the distance of a light year from the central star, and high-energy jets of particles blasting away from the neutron star in a direction perpendicular to the spiral.

While the International Space Station (ISS) orbits in excellent health, technical representatives from NASA and the Russian Aviation and Space Agency held a series of Technical Integration Meetings recently, culminating in a Joint Program Review to discuss issues related to the International Space Station Program. During the meeting, the status of the shuttle fleet, the Zvezda Service Module and U.S. elements were reviewed.

It was agreed that it is no longer prudent to proceed with the current service module schedule, considering the integrated status of all elements.

The delay in the service module launch in no way impacts the overall

See ISS STATUS, Page 7

IKONOS satellite data adds high-resolution imagery to data buy

Space Imaging, a Thornton, Colo., company, successfully launched IKONOS– the world's first commercial high-resolution Earth-imaging satellite in September.

NASA's Commercial Remote Sensing Program (CRSP) at Stennis Space Center will purchase $11 million of data from IKONOS - a satellite capable of imaging vehicles, pipelines, ships and other objects at least one meter in size.

The purchase of IKONOS data is part of CRSP's Scientific Data Buy Project, according to Fritz Policelli, a CRSP project manager at Stennis.

"This is the first commercial satellite with very high spatial resolution," said Policelli.

NASA will use data gathered from IKONOS to support on-going research in NASA's Earth Science Enterprise.

Examples of research that will benefit from IKONOS data include studies of the effects of urbanization and deforestation, cross-calibration of NASA's on-orbit remote sensing instruments and development of prototype commercial information products.

The satellite carries both one-meter panchromatic and four-meter multispectral sensors, which will allow the first "color" high resolution satellite imagery to be pro-

See IKONOS, Page 7

Director's Dialogue

from Center Director Roy Estess

Thank you for our success

The last issue of the Lagniappe contained pictures of many people who recently received special recognition and/or awards. As I looked at the pictures, the names, the words, I was reminded of these and all the others here at Stennis who accomplish so much, who work so hard, and are so committed to doing a great job. Few of you know that many years ago I adopted and modified a set of words written by the famous writer, Anonymous. These words have become my personal credo – "I began to succeed when I realized that other people make it possible."

The people who work here at Stennis have great capability and power: capability to do just about anything, and power to individually achieve or fail; capability to conceive new ideas, and power to bring them into being for the benefit of all; capability to set and maintain high standards for themselves and the rest of us, and power to ensure that these goals are met.

Our jobs are not easy. Life is sometimes hard for many, and keeping a balance between professional and personal responsibilities can be difficult. Often, others don't understand why we are so committed to what we do. The awards ceremony reminded me again how fortunate I am to be at this place at this time; to be teamed with you, and to accomplish those assignments that the taxpayers have entrusted us with achieving. I extend my thanks to each and every one of you for the many successes you have made possible.

NASA earns ISO 9001 registration at all sites

All NASA centers, NASA Headquarters, the Jet Propulsion Laboratory and all of NASA's government-operated facilities have achieved ISO 9001 registration or been recommended for registration.

With this accomplishment, NASA became the world's first federal or state agency with multiple locations to have all of its sites under ISO 9001registration.

With this accomplishment, NASA became the world's first federal or state agency with multiple locations to have all of its sites under ISO 9001 registration.

NASA Headquarters is among the first corporate headquarters offices in the world to achieve its ISO 9001 registration.

Administrator Daniel Goldin challenged NASA in November 1996 to have all the agency's facilities certified by September 1999.

"We are leaders in the world of science and technology. We must also be leaders in the world of quality. I am requiring that the Agency be third-party certified in our key processes, by an internationally recognized registrar, to ISO 9001," said Goldin.

The ISO 9001 standard is an internationally accepted set of topics comprising the basic items needed to define and implement a Quality Management System for an organization.

An impartial auditor evaluates the effectiveness and completeness of the quality management system before recommending registration.

First ignition test of Aerospike a success

The first ignition system test of the XRS-2200 Linear Aerospike Engine for the Lockheed Martin X-33 prototyoe vehicle was successfully conducted Oct. 7 at approximately 10:33 p.m. CDT. The test, which was done to develop the engine start sequence from zero to 1.12 seconds and verify combustion wave ignition, ran the full planned duration of 1.12 seconds.

This was not an actual "hot-fire" test of the aerospike engine, but one of several steps to get to firing the engine. The ignition system serves as a kind of "pilot light" to ignite the combustible propellant and oxidizer and literally "light" the engine. After approximately five more ignition system tests, hot-fire tests of the engine will begin.

Rhonda Foley engineers quality for Stennis Space Center

Even as a high school student, NASA's Rhonda Foley knew her interests in math and science would take her into the field of engineering.

The New Orleans, La., native grew up in a home filled with role models where she was even quizzed on Einstein's law of relativity.

Foley's father, the late Eugene Lewis, was a self-employed electrician and entrepreneur, and her older brother, the late Gregory Lewis, was an electrical engineer.

"As a young child my father use to tell me about Einstein's theory of relativity and would explain to me different theorems of geometry," Foley remembered. "I enjoyed solving calculus and physics problems in high school and participating in science fairs. I made the decision to pursue an engineering degree the summer before attending college. I chose engineering because it required mathematics and science, and I knew it would be a challenge."

Foley's hard work and dedication has paid off. A 1984 graduate of the University of New Orleans with a bachelor's degree in mechanical engineering, Foley enjoys her job as a quality engineer with NASA.

"I've always wanted to work for NASA, so I could not pass up such a wonderful opportunity. It was a dream that had come true," Foley said. "I always had a desire to work for NASA so that I could contribute to the nation's space program."

As a quality engineer, Foley is responsible for reviewing designs and specifications to ensure components, systems and subsystems that are designed, fabricated, constructed, installed and/or tested for Stennis Space Center's end use, meet established engineering quality requirements.

"I chose engineering because it required mathematics and science, and I knew it would be a challenge."

Rhonda Foley

"I have been involved with many projects, some of which include the Diagnostic Testbed Facility, the Component Test Facility—now the E-Complex, the Liquid Hydrogen Transfer Facility and the High-Pressure Gas Restoration Facility," she added.

"It is a challenge working in the capacity in which our office operates. The quality and safety disciplines must address any technical issue or concern that could compromise the quality and/or safety of the end products associated with the projects and programs at Stennis."

Foley began her NASA career 11 years ago in the Safety, Reliability and Quality Assurance Office at Stennis, now Safety and Mission Assurance. Prior to joining NASA, she was employed with Martin Marietta, New Orleans, La., now Lockheed Martin, as a tool designer.

While at Martin Marietta, Foley designed mechanical assembly and robotic tooling used to apply the Thermal Protection System to the external tank which is assembled at the Michoud Facility in New Orleans.

Foley was offered a job with NASA after accepting an engineering position with Boeing Rocketdyne as a test conductor here at Stennis.

SSC Employee Profile

Foley said she is proud that Stennis is recognized as NASA's lead center for Propulsion Testing and that the quality and safety organization plays a vital role in the operations of the facilities used to test state-of-the-art technology at Stennis.

"We take our job very seriously," she said. "Years ago, the quality and safety disciplines, whether NASA or contractor personnel, were viewed as police, invoking requirements, but now I think we are viewed as a team player. Those days of inspecting quality into a product are long gone. Quality requirements must be established up front during the design phase."

Since coming to Stennis in 1988, Foley said she has most noted that NASA was once the customer.

"But now we have customers that we provide services to, with the addition of the E-Complex, which allows for more testing capability," she noted.

"At Stennis, NASA has broadened its competitive edge and marketability with our recent ISO 9000 certification," she said. "With the ISO certification, we are moving toward an advanced quality system or concurrent engineering–one that identifies quality in the development process and identifies the prevention of defects rather than the identification and correction of defects after the fact.

Foley shares her time away from Stennis with her six-year-old daughter, Aniyah Travae Foley and is active in her church and community where she encourages youth to pursue careers in the fields of math and science.

Stennis Space Center Director Roy Estess, (left, center) was recently presented with an award from Louisiana Gov. Mike Foster and the Louisiana Department of Economic Development. Estess was recognized as a "Louisiana Partner" for his many years of cooperation with the state. Taking part in the presentation were, from left, David Doss, district manager for Congressman David Vitter; Dr. Jerry Draayer, associate commissioner, Louisiana Board of Regents; Roy Keller, director, Louisiana Technology Transfer Office; Kevin Cunningham, assistant chief of staff, Gov. Mike Foster; Estess; Charlie D'Agostino, director, Louisiana Business and Technology Center; Don Hutchinson, state director, U.S. Sen. Mary Landrieu; Vic Johnson, director, Policy and Planning, Louisiana Department of Economic Development; and Malcolm Myers, state director, U.S. Sen. John Breaux.

Ocean research cruise with Navy provides unusual opportunity for NASA/Earth science student

When Callie Hall tells her friends how she spent her summer, the 25-year-old co-op student in NASA's Earth System Science Office (ESSO) will not relate a typical tale of sun, fun and surf.

Instead, the Bay St. Louis native, who is working on her master's degree in biological oceanography at the University of Southern Mississippi, can tell friends that she spent nearly a month aboard the USNS Silas Bent in the South China Sea.

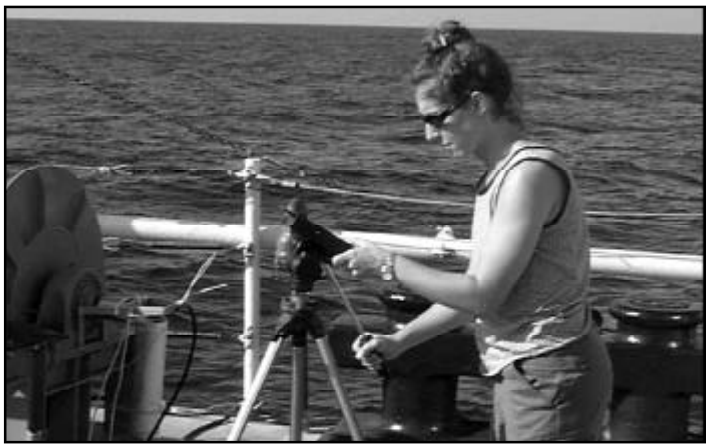
From July 5 through July 26, Hall, along with NASA's Dr. Richard Miller, chief of Stennis's Earth System Science Office (ESSO), sailed from Pusan, South Korea, to the port of Singapore as part of a joint project between NASA and the Naval Oceanographic Office.

The research cruise was Miller's eighth with NAVOCEANO; however, the first international trip for Hall, a former SHARP Scholar and participant in the NASA Junior Fellows Program. The cruise was also a first for any Stennis co-op student.During the month-long cruise, Hall assisted Miller in acquiring bio-optical oceanographic data from the South China Sea.

These data were taken as part of the NASA SIMBIOS (Sensor Intercomparison and Merger for Biological and Interdisciplinary Oceanic Studies) project and will be used to calibrate and validate ocean color algorithms developed for the Sea-viewing Wide Field-of-View Sensor (SeaWiFS) instrument. The purpose of the SeaWiFS is to provide global data of ocean properties, specifically ocean color, to the Earth science community.

Ocean color provides information on the materials suspended in the water, particularly phytoplankton, the microscopic plants of the ocean. Subtle changes in ocean color signify various types and quantities of phytoplankton, which have both scientific and practical applications. The SeaWiFS Project will develop and operate a research data system that will process, calibrate, validate, archive and distribute data received from an Earth-orbiting ocean color sensor.

Hall explained that phytoplankton are an important indicator of water quality and hence, general "health" of an aquatic system.



NASA co-op student Callie Hall takes atmospheric measurements onboard the USNS Silas Bent.

"The presence, concentration and physiological state of phytoplankton provide information on the conditions of a body of water," Hall said. "We hope to develop algorithms that can map images from SeaWiFS to phytoplankton concentrations."

The cruise was a continuing aspect of a partnership between the ESSO and the Naval Oceanographic Office (NAVOCEANO).

"This was my first sea voyage," Hall said. "It was a different experience. All you see is ocean around you, but it was fun. There was no other way to get the experience that I received during the cruise. If your degree is in marine biology or oceanography, I feel the best way to learn is to go on an oceanographic cruise."

Before the trip, Hall prepared by "bulk packing" everything and had to endure several immunization injections that, according to her, "...were not so bad." She said her quarters aboard the USS Silas Bent were pretty comfortable as well.

Miller said the cruise was a success, and Hall proved to be an invaluable help.

"Callie was responsible for acquiring data from a prototype instrument designed to measure the physiological status of phytoplankton," Miller said. "These data are an exciting new part of our work. It took several hours to take the measurements at each station. I could not have done it without Callie."

Dr. David Potter, president of Delta State University, met recently with representatives from the Stennis Space Center. Potter received overviews of the Mississippi Model for Workforce Development Education and Training program, the Propulsion Test Directorate, the Center of Higher Learning and the Commander, Naval Meteorology and Oceanography Command. Pictured from left are Dr. Ramona Travis, University Affairs officer for the NASA Education and University Affairs Office; Potter; Dr. John Thornell, associate vice president for academic affairs; Henry Outlaw, chair of the Physical Sciences Department, Delta State University; and Dr. David Powe, chief of The Education and University Affairs Office at Stennis.

Goldin names head of Mars Climate Orbiter investigation team

NASA Administrator Daniel S. Goldin has named Arthur G. Stephenson, director of NASA's Marshall Space Flight Center, Huntsville, Ala., to be the head of the Mars Climate Orbiter Mission Failure Investigation Board.

Preliminary findings by an internal peer review indicate that a failure to recognize and correct an error in a transfer of information between the Mars Climate Orbiter spacecraft team in Colorado and the mission navigation team in California led to the loss of the spacecraft.

The investigation board will look independently into all aspects of the failure of the mission, which was lost Sept. 23 as the spacecraft was entering orbit around Mars.

Mary's Drive Inn of Biloxi selected to operate space-themed cafe in expanded Visitors Center

The owners of Mary's Drive Inn of Biloxi, a highly successful restaurant for the past 50 years, have been selected to operate the new 1960s-style, space-themed restaurant at the Stennis Space Center Visitors Center when it reopens in spring 2000. The restaurant decor will feature an extensive collection of space memorabilia from that era.

"Mary's specializes in home-style cooking made from scratch, said co-owner Joe Staehling.

"We think Mary's will offer the expanded Visitors Center the opportunity to feature local cuisine presented in a fun, family-oriented atmosphere," said co-owner Carey Merrell.

"We look forward to building an outstanding relationship with the visitors and staff at Stennis," Staehling said.

The Visitors Center closed recently to complete an expansion project that will offer 14,000 square feet of interactive exhibits representing NASA, the Commander, Naval Meteorology and Oceanography Command and other Stennis agencies. The new restaurant, operated by Mary's Drive Inn, will offer visitors a taste of the local cuisine set in a 1960s retro theme.

"We certainly look forward to having Mary's Drive Inn with us next spring," said Jon Roth, Stennis' assistant to the director. "They enjoy an outstanding reputation along the Mississippi Gulf Coast for quality food service and will be a welcome addition to the newly-expanded Stennis Space Center Visitors Center."

Linda Theobald, NASA public affairs specialist, said the expansion will give the Visitors Center a wider forum for showcasing the work of NASA, Commander, Naval Meteorology and Oceanography Command and other Stennis resident agencies.

"The addition of Mary's Drive Inn, right inside the Visitors Center will provide visitors and their families greater convenience for a full day at Stennis," she said.

HYBRID...

(continued from Page 1)

thrust or the ability to cleanly turn off the rocket motor.

The hybrid rocket combines solid fuel and liquid oxygen propellants to simplify motor operation, match performance with customer need and provide a product with low cost, highly operable ground support requirements. Hybrid rocket motor design allows a degree of thrust control, as well as a non-destructive means to shut down the engine on command. The sounding rocket is but one of the ongoing programs using a hybrid rocket motor design.

According to NASA's David Liberto, project manager of the HYSR program at Stennis, the overall test plan is broken down into three primary test phases, which will end with an "as close as possible" flight configured test setup.

"The test series is expected to be completed in early March 2000. Successful tests and operation of the rocket could lead to manufacturing and assembly of the HYSR at Stennis.

IKONOS...

(continued from Page 4)

duced using a proprietary production capability.

Examples of details that can be seen in one-meter resolution imagery include trucks, roads, pipelines, individual trees, crops, large equipment and boats. The sensor does not have adequate resolution to image individual people.

With the ability to revisit any location on the globe at one-meter resolution every three days, and at lower resolution more frequently, IKONOS will enable customers, like NASA, to receive imagery updates on a regular basis.

This capability will benefit a broad array of industries including agriculture, mapping, state and local governments, land use management, oil and gas, utilities, disaster management, telecommunications, tourism, national security, insurance, news gathering and others.

Space Imaging's IKONOS satellite (foreground) in the cleanroom at Lockheed Martin Missiles & Space, Sunnyvale, Calif., prior to the September 24 launch.

Former astronaut lends expertise to Space Station crew

Frank Culbertson, who has been leading NASA's efforts in the Shuttle-Mir program and the International Space Station, will return to space to command the third crew to live and work aboard the space station.

Culbertson, a retired U.S. Navy captain, was the Deputy for Operations, International Space Station Program Office, at NASA's Johnson Space Center, Houston, Texas. He headed the Shuttle-Mir Phase 1 Program, in which Shuttle missions to the Russian Mir space station prepared the United States and Russia to work together as part of the International Space Station. Culbertson piloted the STS-38 mission in 1990 and commanded STS-51 in 1993.

"Frank brings a wealth of expertise to this mission," said Jim Wetherbee, director of Flight Crew Operations at Johnson. "His flight experience and unique perspectives on both Phase 1 and the Space Station programs make him well qualified to lead Expedition Three."

Culbertson replaces astronaut Ken Bowersox, a U.S. Navy captain, who continues to train as commander of the backup crew for the first expedition mission in early 2000. Culbertson joins Russian Space Agency cosmonauts Vladimir Dezhurov and Mikhail Turin.

ISS STATUS...

(continued from Page 3)

launch and assembly schedule for the station. This is because the launch dates for downstream flights likely will be adjusted because of the ongoing wiring inspections on all of the Space Shuttle orbiters and recent work delays caused by Hurricane Floyd. Assembly sequence adjustments also will be presented to the International Partners for discussion and concurrence at the next Space Station Control Board meeting.

The ISS is orbiting in a 247 by 230 statute mile orbit and has completed more than 4,900 orbits of the Earth. Space station viewing opportunities worldwide are available on the Internet at: http://spaceflight.nasa.gov/realdata/sightings/.

Safety Corner

This information provided by NASA's Safety Reliability and Quality Assurance Office

New workers, high risk

If you are new at the job, risk of injury is much greater than for more experienced co-workers. The Bureau of Labor Statistics (BLS) has reported that 40 percent of workers injured have been on the job less than one year.

Studies show that employees injured at work often lack one vital tool to protect themselves: information.

Workers often have not received the necessary safety information they need, even on jobs involving dangerous equipment where training is clearly essential.

What can you do?

- Be sure you understand all necessary safety measures before you start to work. If the explanation is unclear, ask again.
- Use what you learn all the time.
- If respirators or other personal protective equipment are required, wear them consistently, and maintain them properly. If guards are required on equipment, make sure they are in place.
- Don't take short-cuts; follow safety and health instructions to the letter.
- Follow the hazard warnings on chemicals you use. Obtain further information from the material safety data sheet on hazardous chemicals.
- Ask your employer about emergency procedures, and be prepared to follow them in the event of chemical spill or fire.

QUICK LOOK

■ Daylight-saving time ends at 2 a.m., Sunday Oct. 31. Be sure to set your clocks back one hour. When you go from room to room to reset clocks, coffee makers, VCRs and other appliances, fire prevention specialists suggest also checking or replacing smoke alarm batteries.

■ The Annual NASA Golf Tournament will be Thursday, Nov. 11 (Veteran's Day) at Windance Country Club. All NASA and retired NASA employees and spouses are welcome to participate. Entry fee is $35 (Windance members $3.00 plus cart fee) and includes: greens fees, cart, prizes and a cookout after golf round. For additional information, contact Marina Benigno at Ext. 2387. Fees are due no later than Nov. 5. Tee times start at 8:30 a.m.

■ The Stennis Clinic has two days remaining in the fall flu vaccinations schedule. Vaccinations are available Thursday and Friday, Oct. 21 and 22 from 8:30 a.m. until 11:30 a.m. and from 1:30 p.m. until 4 p.m. For more information, call Ext. 3810.

■ The Stennis Space Center Recreation Association will host a Halloween Party, Oct. 29 beginning at 4 p.m. at the Cypress House. Judging for the costume contest will begin at 6:30 p.m. A live band will provide entertainment. For additional information, call Ext. 2311.

DATA BUY...

(continued from Page 1)

"A scientist can order new images gathered from the Landsat 7 satellite, lay it over the Earth Satellite Corp.-provided data, and have up-to-date, orthorectified data on any particular region of Africa right now," Policelli said. "When the entire project is completed, scientists will have that capability for the entire world."

Dr. Compton Tucker, a senior Earth scientist at NASA's Goddard Space Flight Center in Greenbelt, Md., is supporting the Commercial Remote Sensing Program Office with the project. According to Tucker, the imagery will be used for land research by the government, as well as the academic and private sector communities.

The data is available for use by government-affiliated researchers and can be ordered at http://www.crsp.ssc.nasa.gov/databuy.

Stennis' health fair focuses on benefits

Stennis Space Center's Federal Employees Health Benefits Fair is scheduled from 9 a.m. until 2 p.m., Nov. 9, in the Building 1100, Cafeteria lobby.

Insurance representatives, including Alliance, Blue Cross/Blue Shield, GEHA, Aetna, Gulf South, and Prime Health Care will be on hand to discuss choices for the year 2000 in health benefits for federal employees. The selection process for 2000 benefits runs Nov. 8 - Dec. 13. Elections are effective Jan. 2, 2000.

For additional information, contact Dorsie Jones at Ext. 2337.

LAGNIAPPE

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